


ASH AT WORK

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NAA Officials Stage 10-Day Recruiting Trip

President Ronald E. Morrison and Executive Director James N. Covey completed a successful 10-day promotional and recruiting trip to the Far West and Southwest in early November.

The NAA executives met with officials of member and non-member electric utilities and ash marketing organizations during the trek.

The program was designed to not only acquaint the firms with the advantages of NAA membership but to review the impact of new environmental regulations being promulgated under the Resource Conservation & Recovery Act (RCRA) as well as proposed Federal procurement guidelines featuring the use of fly ash concrete and concrete products.

"I feel the trip was an unqualified success," Covey stated. "If the NAA is to remain a viable organization and be responsive to the needs of our members we are going to have to provide more services," he added.

"And there is no better way to do this than to sit down face-to-face with all segments of the ash industry, the NAA director related. "Our meetings strengthened my determination to develop and offer regional seminars and training sessions for our members," Covey noted.

"Mr. Morrison's input and support was invaluable in our discussions with the utility executives and prospective new members," he said. "In fact, I sincerely hope to get all our directors more deeply involved in the association's programs and projects," Covey concluded.

"The visitations enabled us to have one-on-one discussions about the special problems facing these producers and marketers which will help us shape future ash industry programs," President Morrison stated.

(Continued on page 2)

1981 Calendar

January

8

EPA Hearing on Proposed Guidelines for Federal Procurement of Cement & Concrete Containing Fly Ash

Washington, D.C.

20

"Construction Applications of Power Plant Ash," Detroit Chapter of the American Society of Civil Engineers

"Required Quality Control For Fly Ash in Portland Cement Concrete," Detroit Concrete Improvement Board

Detroit, MI

February

8-12

World of Concrete '81

Exhibit by NAA Marketers

Participation in American Concrete Institute (ACI) meeting.

Dallas, TX

25

Executive Committee, National Ash Association

Washington, DC

March

10

Meeting with representatives of American Concrete Pipe Association.

NAA Offices, Washington.

20

Meeting with Brenden O'Kelley, National Electric Generating Board of Ireland to discuss "Use of PFA in Portland Cement for Brick Laying."

NAA Offices, Washington.

April

1

Annual Meeting National Ash Association

NAA Offices, Washington

9

"Utilization of Fly Ash in Construction Applications," NAA Director Covey and Dennis L. Kinder (AEP), Detroit Builders Exchange.

Detroit, MI.

22-24

Missouri Valley Electric Association (MVEA) Conference

Paper: "Management's Responsibility For an Effective Ash Marketing Program."

Kansas City, MO

May

13

ASTM D-22 Meeting, "Acid Rain."

Phoenix, AZ.

September

27-30

SASHTO '81 Convention.

Atlanta, GA.

April 1 Date Set For Annual Meeting

WASHINGTON—The National Ash Association will hold its annual meeting here on April 1, Executive Director James N. Covey has announced.

Formal notices have been prepared and are being mailed, he added. A meeting of the Executive Committee will precede the annual business meeting. The latter is set for 11 a.m. and will be held at the NAA offices.

President Ronald E. Morrison will preside at the twin meetings. Head of the Ash Utilization and Research Section for American Electric Power. Morrison is now in his second term as head of the ash industry's trade association.

In addition to the election of officers for the coming year, the agenda will include several items of extreme importance to the membership, Covey's announcement noted.

They are changes in the dues structure for members burning lignite and sub-bituminous coal, voting privileges and membership dues for NAA marketing members, contract renewal for the executive director, setting date and location for Sixth International Ash Utilization Symposium.

Director Covey also disclosed the replacement of five (5) members on the association's Board of Directors. New members designated by utility members include Gary R. Furman succeeding John M. Preston, Baltimore Gas & Electric Co.; Clifford L. Greenwalt replacing D. G. Raymer, Central Illinois Public Service Co.; Ms. Georgene A. Hall succeeding Howard R. Palmer who

(Continued on page 2)

IN THIS ISSUE

NAA Recruiting Trip	1,2
Annual Meeting	1,2
1981 Calendar	1
Bath County Project	2
1979 Ash Collections	3
Lytag Seeks USA Connection ..	4

Fly Ash Concrete Being Used On Bath County Hydro Project

MOUNTAIN GROVE, VA—Work is progressing on one of the largest fly ash concrete projects to be undertaken East of the Mississippi River—the Bath County Pumped Storage Hydroelectric Project.

All the concrete being utilized in the construction of the 2,100 megawatt station has fly ash in it. The total estimated use of fly ash at completion will be 60,000 tons.

The ash is being supplied by Appalachian Power Company from its Clinch River Station at Carbo, VA. Appalachian is an operating subsidiary of the American Electric Power System.

The first three generating units are scheduled for service in 1985 and second three units in 1986. Each unit has a rated generating capacity of 350,000 kilowatts. The station is to be jointly owned by Virginia Electric and Power Company and the Allegheny Power System. However, the terms of APS's participation have not been finalized.

At the present time workmen are pouring the roof on the powerhouse structure and by early spring the concrete spillway on the lower dam is expected to be completed. Currently 300,000 cubic yards of concrete are in place for the powerhouse.

The powerhouse concrete is utilizing two sizes of aggregate in the mix. The mix calls for 25 percent fly ash. The pour with 3-inch aggregate has averaged 3,817 psi in 28-days and mixes with 1½-inch aggregate has exceeded 4,000 psi in the same time frame.

The major use of fly ash concrete is still a year away. Work on pouring the three 28.5 foot diameter concrete-lined tunnels to carry the water from the upper reservoir to the powerhouse is not scheduled to resume until the spring of 1982.

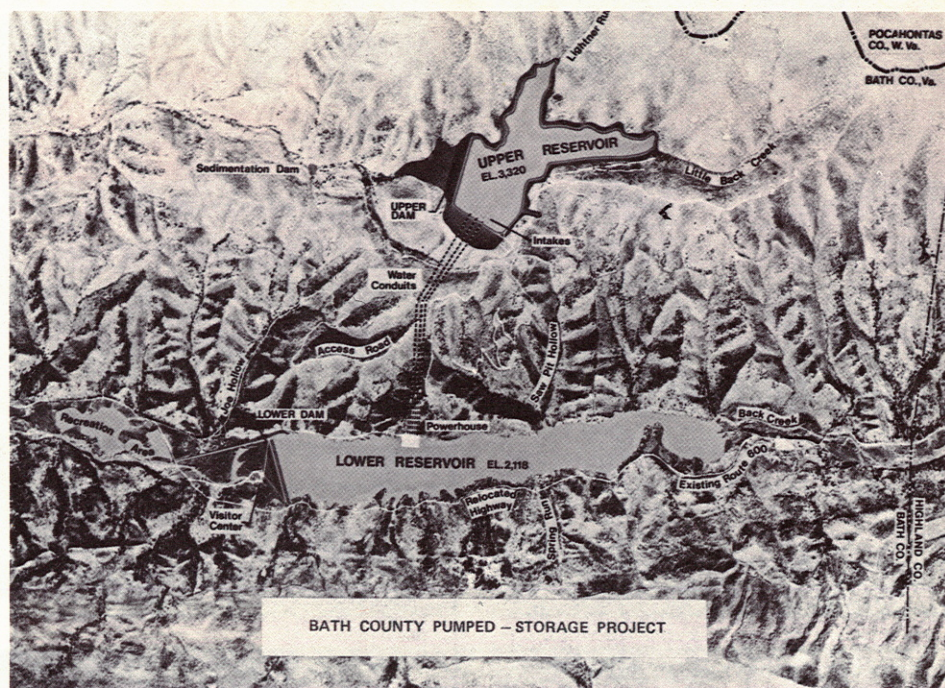
The upper section of the tunnels are 3,700 feet long before making a 990 feet vertical drop to the lower section extending 4,800 feet to the six steel-lined penstocks leading to the powerhouse. The drop in elevation is 1,202 feet.

The mix design on the tunnel concrete calls for the use of 15 percent fly ash. Lab mixes for this application have averaged 6,000 psi in 28 days.

Pumped storage is a variation of conventional hydroelectric generation. Pumped storage uses and re-uses falling water to turn the turbine generators.

When power is required to meet customer needs, water from the upper reservoir will flow through the tunnels and a powerhouse into the lower reservoir. On the way it will drive the turbine generators.

During the night and on weekends,



when customer demand for power is less, electricity from other stations on the VEPCO system, will be used to operate the Bath generators as motors to pump the water back to the upper reservoir. The water will be stored there

until it is needed again to meet the next peak in electrical demand by either APS or VEPCO.

Daniels Construction Co. of Greenville, SC is the general contractor on the \$1.6 billion project.

ANNUAL MEETING

(Continued from page 1)

has retired, Dayton Power & Light Co.; John Shanafelt replacing John Rexwinkel, Iowa Public Service Co.; and Stephen T. Benza succeeding Clark D. Harrison, Pennsylvania Power & Light Co.

President Morrison also reported the appointment of Mr. Furman of Baltimore Gas & Electric to serve as liaison between the NAA and the Utilities Solid Waste Advisory Group's Steering Committee. USWAG is an ad-hoc committee of Edison Electric Institute to protect the utility industry's interests during the formulation and implementation of RCRA and the Toxic Substances Control Act.

The NAA office also noted a Connecticut utility and a Netherland's ash marketer are the latest to join the National Ash Association.

United Illuminating Co. of New Haven, CO is joining the NAA under the special category reserved for ash producers in the process of converting to coal-fired generation. The utility currently operates four oil-fired power stations. James F. Crowe, Chief Mechanical Engineer, will represent United on the NAA Board of Directors.

10 DAY RECRUITING

(Continued from page 1)

Contacts were made with the following individuals and firms:

Mercer Island, WA - Gerald Peabody, Pozzoianic International Ltd.

Portland, OR - Bill Brauer, Pacific Power & Light Co.;

Fred Lamoureux, Portland General Electric;

Salt Lake City, UT - Dr. Val Finayson, Utah Power & Light Co.;

R. H. Hall, Pozzalan Products;

Montrose, CO - R. W. Bryant, Colorado-Ute Electric Association;

Denver, CO - Ed Dunstan, Dunstan Laboratories;

Phoenix, AZ - Robert Morrison, Western Ash Co.

Houston, TX - A. R. Beavers, Houston Lighting & Power Co.

Associate memberships are being sought by Pozzolan, Inc. of Cincinnati, OH, John Ashby; Michael Baker Jr. of Rochester, PA, Earl Rothfuss; NGK-Locke, Inc. of New York, Ken Otsuka; N-Viro Energy Systems Ltd. of Toledo, OH, Eugene Goeb; Volker Stevin Wegen en Asphalt GU of Holland, Netherlands, L. J. Krekt.

Ash Collections Up, Utilization Down In NAA-EEI Survey

WASHINGTON—Ash collections registered a substantial gain in 1979 but utilization did not keep pace with the record tonnages produced during the 12-month period, according to results compiled by the NAA and Edison Electric Institute.

The total coal by-products available for recycling by the ash industry rose to an all-time high of 75.2 million tons—an increase of 7.1 million over 1978.

Ash producers reported fly ash collections of 57.5 million tons—an increase of 9.2 million over the previous year. This gain was offset by a surprising drop of 2.2 million tons in bottom ash while boiler slag production remained at about the same level. Bottom ash totals were set at 12.5 million tons and boiler slag at 5.2 million.

The overall percentage of utilization dipped three percent to 21.0 with the bottom ash dropping to 3.3 million tons—the lowest figure in more than five years. Mass tonnage applications of fly ash was listed at 10 million tons.

The use of fly ash in cement and concrete products continued to climb with a gain of 1.27 million tons in these markets. The cumulative total for the year was placed at 3.37 million tons as compared to 2.1 million in 1978. Comparisons since 1976, the first time these estimates were calculated, are as follows:

1976	1977	1978	1979
912,000 T	1,575,000 T	2,100,000 T	3,370,000 T

Applications in this area are expected to gain further acceptance with the implementation of proposed new Federal procurement guidelines which will specify the use of fly ash concrete. Marketing agents and ready-mix suppliers are now quite active in contacting utility ash producers to firm up sources of supply to meet the anticipated demand. The Environmental Protection Agency recently held final hearings on the guidelines.

Likewise, cement producers are employing greater tonnages of fly ash as a raw material in the forming of cement clinker or in the manufacture of Type 1-P cement. Estimated use in these two categories amounted to 830,000 tons.

NAA officials said they expect the use of bottom ash to rise when the 1980 figures are compiled. Declining Highway tax dollars and the inflation are forcing engineers to seek low cost paving materials and power plant ash are being more readily accepted, the report added.

Ash Collection & Utilization 1979

(Million Tons)

	Fly Ash Tons x 10 ⁶	Bottom Ash Tons x 10 ⁶	Boiler Slag (if separated from Bottom Ash) Tons x 10 ⁶
1. TOTAL ASH COLLECTED	57.5	12.5	5.2
2. ASH UTILIZED	10.0	3.3	2.4
A. COMMERCIAL UTILIZATION			
a. Mixed with raw material before forming cement clinker	.62		
b. Mixed with cement clinker or mixed with cement (Type 1-P cement)	.21		
c. Partial replacement of cement in concrete and blocks	1.9		
d. Lightweight aggregate	.64		
e. Fill material for roads, construction sites, land reclamation, ecology dikes, etc.	1.0		
f. Stabilizer for road bases, parking areas, etc.	1.2		
g. Filler in asphalt mix	.6		
h. Miscellaneous	.4		
ASH DISPOSED OF AT A PROFIT	6.6		
B. ASH REMOVED FROM PLANT SITES AT NO COST TO UTILITY	1.4		
C. ASH UTILIZED FROM DISPOSAL SITES AFTER DISPOSAL COSTS	2.0		
TOTAL ASH UTILIZED	10.0		

Comparative Results

Ash Collected	1966*	1975	1976	1977	1978	1979
Fly Ash	17.1	42.3	42.8	48.5	48.3	57.5
Bottom Ash	8.1	13.1	14.3	14.1	14.7	12.5
Boiler Slag		4.6	4.8	5.2	5.1	5.2
TOTAL ASH COLLECTED—TONS x 10 ⁶	25.2	60.0	61.9	67.8	68.1	75.2
Ash Utilized						
Fly Ash	1.4	4.5	5.7	6.3	8.4	10.0
Bottom Ash	1.7	3.5	4.5	4.6	5.0	3.3
Boiler Slag		1.8	2.2	3.1	3.0	2.4
TOTAL ASH UTILIZED—TONS x 10 ⁶	3.1	9.8	12.4	14.0	16.4	15.7
Percent of Ash Utilized						
% Fly Ash	7.9	10.6	13.3	13.0	17.4	17.4
% Bottom Ash	21.0	26.7	31.5	32.6	34.0	26.4
% Boiler Slag		40.0	45.8	60.0	58.8	46.0
PERCENT OF TOTAL ASH UTILIZED	12.1	16.4	20.0	20.7	24.1	21.0

*First year that data was taken

**1967-1974 data omitted from tabulation because of space limitation.

Compiled by the National Ash Association and Edison Electric Institute.

12-1-80

Covey's Comments

The use of power plant ash in highway construction has been well documented. The financial crunch facing most highway departments is real and could open the door to the expanded use of ash. A survey, recently published by PUBLIC WORKS, offers an insight to the potential as follows:

Program	City Survey Lane Mileage	County Survey Lane Mileage	State Survey Lane Mileage
Rework Existing Roads	33,006	26,852	21,253
Stabilization of Road Bases	3,003	4,855	6,504
Response: 3,470 communities, 1,132 counties, 38 states			

Lytag Ltd. Seeks To Export Fly Ash Technology To United States

HEMEL HEMPSTEAD, ENGLAND—Lytag Limited, one of the world's foremost producers of lightweight aggregate made from fly ash, wants to export its technology to the United States.

Managing Director Derek Moss says the firm wants to make the Lytag process available to American utilities or other potential investors through the sale and licensing of its know how.

The firm is offering complete consulting service from initial fly ash test work through process feasibility and design as well as financial and marketing appraisals, Moss added.

The English official explained the capital cost of a plant, designed to process 250,000 tons of fly ash per year, would range between 8-12 million dollars.

Moss termed a Lytag plant a "bottomless landfill" that offers three potential benefits to an ash producer including savings in disposal costs, environmental relief, and an extension of fly ash sales.

Lytag has manufactured and sold over 5 million tons of lightweight aggregate at the three plants they operate in the United Kingdom. Lytag aggregates were first introduced in 1962.

During the process the fly ash is pelletized and then sintered at 1,300°C to produce hard, spherical nodules with a 40 percent void ratio. Lytag aggregate is available in three sizes from ½" down to fines and are stored out in the open.

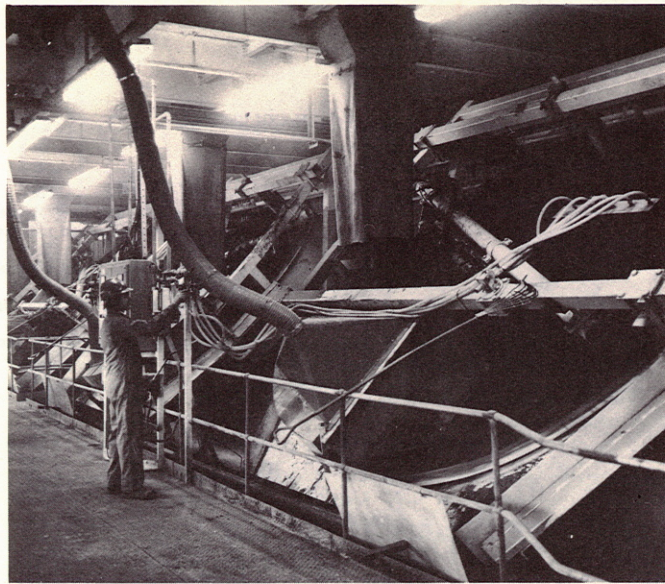
A major portion of Lytag aggregate go to blocks because of its thermal conductivity, fire resistance, and light weight. Other applications include precast panels, structural concrete, refractory products, vehicle arresters, horticulture, and land drainage.

Over the years a number of plants using similar processes have been erected in the United States and Canada but none are believed to be in operation at the present time. Specification modifications are said to be the biggest deterrents to full-scale acceptability.

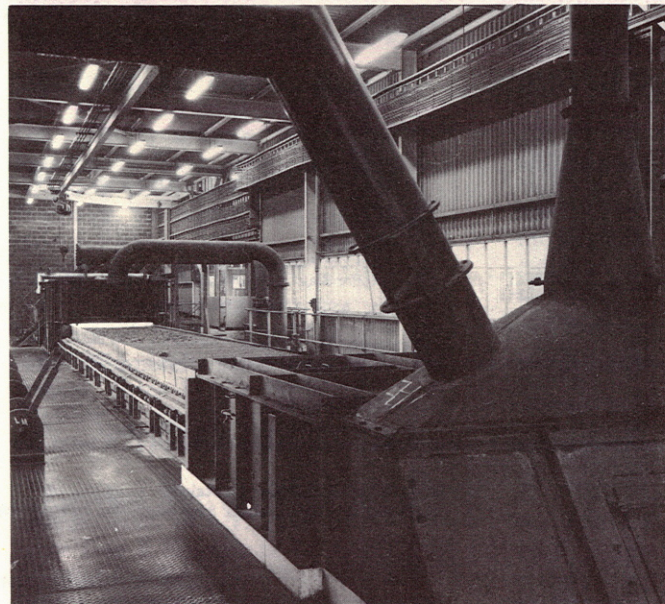
What Is Acid Rain?

PITTSBURGH—"Further control of sulfur dioxide emissions from power plants may not have any effect in controlling acid rain," according to a coal company executive who has studied the subject for several years.

William N. Poundstone, executive vice president of Consolidation Coal Company, added that we have known "for some time there does not appear to be a quantitative relationship between sulfur dioxide and sulfates."



Pelletizers



Sinter Strand



Structural



Cladding



Building Blocks



Screeding



Thermal Concrete



Refractory



Vehicle Arresters



Horticulture



Land Drainage

with compliments of